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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,036	11/17/2003	Hideo Hagiwara	511.33114CC6	1139
20457	7590	02/09/2006	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			CHU, JOHN S Y	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/713,036

Applicant(s)

HAGIWARA

Examiner

John S. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 3,4,10-13,17 and 19-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23 and 28 is/are allowed.
- 6) ☒ Claim(s) 3,4,10-13,17,19-22,24-27 and 29-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This Office action is in response to the amendment filed December 20, 2005.

1. The rejection under 35 U.S.C. 102(e) as being clearly anticipated by HAGIWARA et al 5,472,823 is **withdrawn** in the view of the amendments by applicant reciting the specific diamine groups as consisting of at least those groups. The HAGIWARA et al '823 reference discloses an unsaturated diamine not listed in the current claims.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3,4, 10-13, 17 and 19-22, 24-27, and 29-37 rejected under 35 U.S.C. 103(a) as being unpatentable over RIEDIKER et al 4,548,891.

The claimed invention is now drawn to the following:

10. (Currently amended) A photosensitive resin composition which ~~comprises~~consists essentially of (1) a polyimide precursor produced using ~~(a) an~~ oxydiphthalic acid or acid anhydride thereof and at least one diamine as reactants as ~~a reactant~~ for forming the polyimide precursor, wherein said at least one diamine consists of ~~and (b)~~ at least one diamine selected from the group consisting of diaminodiphenyl ether, diaminodiphenyl sulfone, metaphenylene diamine, p-phenylenediamine, p-xylylenediamine, diaminonaphthalene, dimethylbenzidine, dimethoxybenzidine, diaminodiphenylmethane, diaminodiphenylsulfide, benzophenonediamine, bis((aminophenoxy) phenyl)sulfone, hexafluoro-bis(aminophenyl)propane, bis((aminophenoxy)phenyl)propane, dimethyl-

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diaminodiphenylmethane, bis((aminophenoxy)phenyl) sulfone, bis(aminophenyl)propane and diaminopolysiloxane, (2) an addition-polymerizable compound, and (3) a photoinitiator, and which is adapted to be exposed and developed using an i-line stepper which uses monochromatic light, the polyimide precursor being such that a 20  $\mu\text{m}$  thick film thereof has a transmittance, at 365nm, of at least 40%.

25. (Currently amended) A photosensitive resin composition which consists essentially of (1) a polyimide precursor produced using (a) an oxydiphthalic acid or acid anhydride thereof as a reactant for forming the polyimide precursor, and according to claim 10, wherein said (b) at least one diamine is selected from the

group consisting of diaminodiphenyl sulfone, metaphenylene diamine, p-phenylenediamine, p-xylylenediamine, diaminonaphthalene, dimethylbenzidine, dimethoxybenzidine, diaminodiphenylmethane, diaminodiphenylsulfide, benzophenonediamine, bis((aminophenoxy) phenyl)sulfone, hexafluoro-bis(aminophenyl)propane, bis((aminophenoxy)phenyl)propane, dimethyl-diaminophenyl-methane, tetramethyl-diaminodiphenylmethane, bis((aminophenoxy)phenyl) sulfone, bis(aminophenyl)propane and diaminopolysiloxane, (2) an addition-polymerizable compound, and (3) a photoinitiator, and which is adapted to be exposed and developed using an i-line stepper which uses monochromatic light, the polyimide precursor being such that a 20  $\mu\text{m}$  thick film thereof has a transmittance, at 365nm, of at least 40%.

RIEDIKER et al discloses a photopolymerizable composition comprising a prepolymer made of a polyamic acid, see column 13 and 14 for the structure representations of the prepolymers. The composition further includes a metallocene photoinitiator and an ester of acrylic or methacrylic acid, see column 2, lines 9-68. Applicants are directed to column 11, lines 65 and 66 for the components used to make the polyamic acid wherein an oxydiphthalic acid anhydride is used. Column 12, lines 5-41 disclose the diamine that is condensed with the

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dianhydride to make the polyamic acid resin. Applicants are specifically directed to lines 6-9 which disclose identical diamines as listed in claims 1 and 25.

RIEDIKER et al lacks a working example using an oxydiphthalic acid anhydride with a diaminodiphenyl ether as recited, however clearly discloses the use of the oxydiphthalic acid anhydride as a suitable precursor for making the polyamic acid prepolymer.

It would have been *prima facie* obvious to one of ordinary skill in the art of negative working photosensitive compositions comprising polyamic acid to substitute an oxydiphthalic acid anhydride in for the pyromellitic anhydride precursor as motivated and taught by RIEDIKER et al and reasonably expect same or similar result as disclosed in RIEDIKER et al such as excellent light sensitivity, an excellent resolution and heat resistance of the patterned images formed.

4. Claims 23 and 28 are allowed.

None of the references of record disclose the recited hydroxyl containing diamine used to make the polyamic acid as claimed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

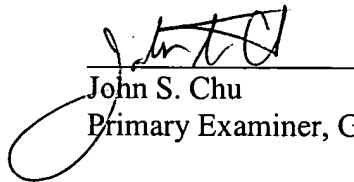
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Chu  
Primary Examiner, Group 1700

J.Chu  
February 8, 2006